

Connecting a Magelis® XBTG/XBTGT Operator Terminal to an Allen-Bradley ControlLogix EtherNet/IP Module

Retain for future use.

Overview

The Magelis® XBTG/XBTGT operator terminal from Schneider Electric can be integrated into an Allen-Bradley ControlLogix automation system.

This bulletin describes how to connect the Magelis XBTG/XBTGT operator terminal to an Allen-Bradley ControlLogix EtherNet/IP module, and how to configure the software for the connection. However, it does not provide instructions for using Vijeo® Designer software or Allen-Bradley products.

Figure 1: Magelis XBTG/XBTGT Operator Terminal



Presumption

This bulletin is written for individuals familiar with Vijeo Designer software and network operation. If you are not familiar with this software or network operation, please consult your system administrator before attempting to connect or configure the operator terminal to an EtherNet/IP module.

Requirements

The following are required to connect a Magelis XBTG/XBTGT operator terminal to an Allen-Bradley ControlLogix EtherNet/IP module:

Hardware

- The Magelis XBTG/XBTGT operator terminal appropriate for your application. If Modbus® TCP/IP is required, select a model with an Ethernet port. The XBTG4330 operator terminal is used in this example.
- A serial download cable appropriate for the XBTG/XBTGT operator terminal. The XBTZG915 cable is used in this example.
- An Allen-Bradley ControlLogix ENBT/A EtherNet/IP module. Obtain the module from an authorized Allen-Bradley distributor.

Software

- Vijeo® Designer software, version 4.3.0 or higher, to program the Magelis operator terminal.
- RSLogix 5000 software and accessories purchased from an authorized Allen-Bradley distributor.




Safety Information

Notice

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards, or to call attention to information that clarifies or simplifies a procedure.

A lightning bolt or ANSI man symbol in a “Danger” or “Warning” safety label on the equipment indicates an electrical hazard which, as indicated below, can or will result in personal injury if the instructions are not followed.

The exclamation point symbol in a safety message in a bulletin indicates potential personal injury hazards. Obey all safety messages introduced by this symbol to avoid possible injury or death.

Symbol	Name
	Lightning Bolt
	ANSI Man
	Exclamation Point

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

CAUTION

CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result in** property damage.

Qualified Personnel

For the protection of personnel and equipment, a qualified person must perform the procedures detailed in this bulletin.

A qualified person is one who has skills and knowledge related to the construction and operation of this electrical equipment and the installation, and has received safety training to recognize and avoid the hazards involved. Refer to the most current release of NFPA 70E®, "Standard for Electrical Safety in the Workplace®," for safety training requirements.

In addition, the person must be:

- Able to read, interpret, and follow the instructions and precautions in this data bulletin and the other documentation referenced.
- Able to use the required tools listed in this data bulletin in a safe and correct manner.

Before You Begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guards on a machine can result in serious injury to the operator of that machine.

WARNING

UNGUARDED MACHINERY CAN CAUSE SERIOUS INJURY

- Do not use this software and related automation equipment on equipment which does not have point-of-operation protection.
- Do not reach into machinery during operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, and government regulations. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only the user can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine; therefore, only the user can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, the user should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and serious injury can occur. Software products alone cannot protect an operator from injury. For this reason, the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that the appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of-operation protection must be coordinated with the related automation equipment and software programming.

NOTE: Coordination of safeties and mechanical/electrical interlocks for point-of-operation protection is outside the scope of the Function Block Library, System User Guide, or other implementation referenced in this documentation.

Start-up and Test

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check be made and that enough time is allowed to perform complete and satisfactory testing.

⚠ CAUTION

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

Failure to follow these instructions can result in injury, or equipment damage.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and grounds, except those grounds installed according to local regulations (according to the National Electrical Code® in the USA, for instance). If high-potential voltage testing is necessary, follow recommendations in the equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove ground from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

Operation and Adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1-1995 (English version prevails):

- “Regardless of the care exercised in the design and manufacture of equipment or in the selection and rating of components, there are hazards that can be encountered if such equipment is improperly operated.”
- “It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer’s instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer’s instructions and the machinery used with the electrical equipment.”
- “Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.”

Related Documents

If there are no documents recommended, this subsection can be removed.

Title of Documentation	Reference Number
Magelis XBTGT Operator Terminal User’s Manual	35010372
Catalog Human Machine Interfaces	MKTED206071EN
Allen-Bradley EtherNet/IP (Native) Driver Manual	Available from Vijeo Designer Help menu

You can download these technical publications and other technical information from our website at www.us.schneider-electric.com.

Product Related Information

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must be installed and serviced only by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment. Disconnect the power at the processor and at the power source.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors and covers before turning on power to this equipment.
- Confirm that a proper ground connection exists before applying power to the unit.
- Use only the specified voltage when operating this equipment and any associated products.

Failure to follow these instructions will result in death or serious injury.

WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.¹
- Each implementation of an Altivar 31C drive must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

1. For additional information refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control" and to NEMA ICS 7.1 (latest edition), "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems."

User Comments

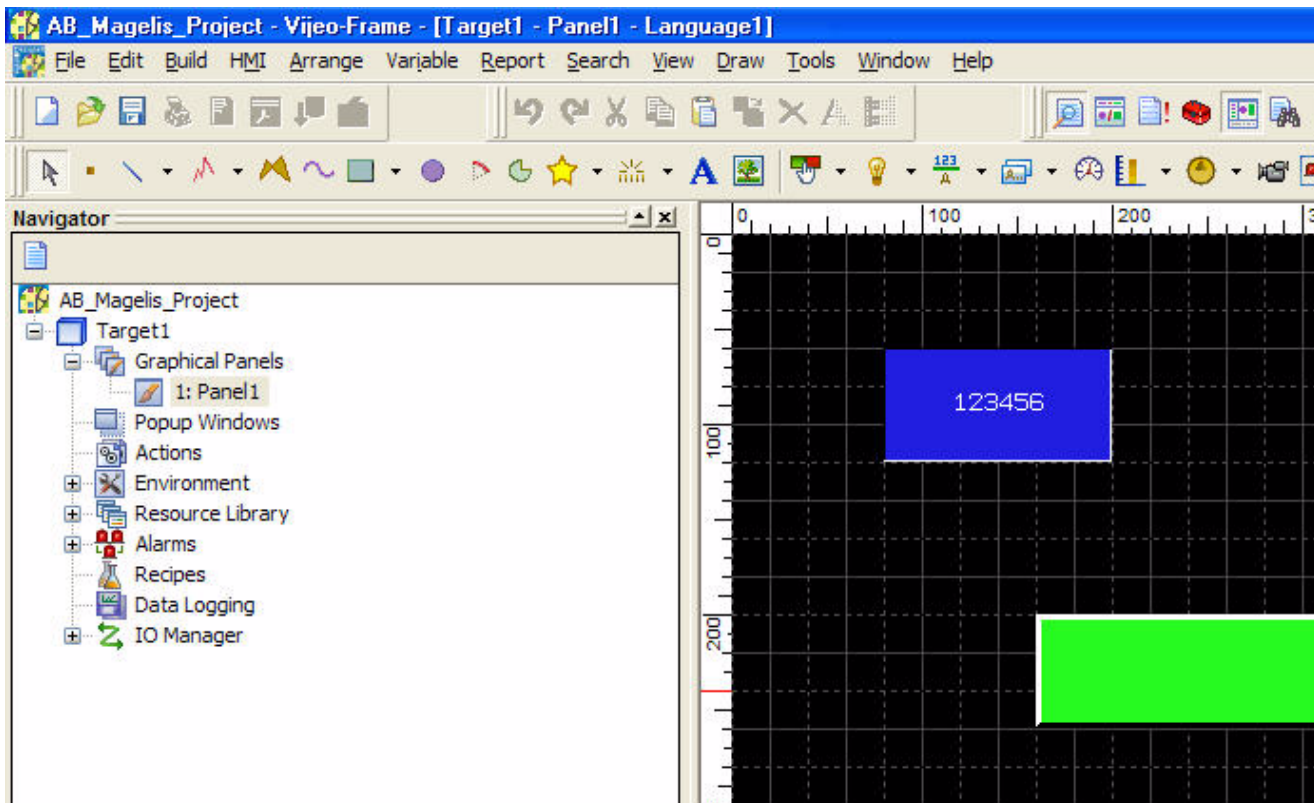
We welcome your comments about this bulletin. You can reach us by e-mail at oem.solutions@schneider-electric.com.

Connecting the Magelis XBTG/XBTGT Operator Terminal

To connect the Magelis XBTG/XBTGT operator terminal to the Ethernet network:

1. Connect the Magelis XBTG/XBTGT operator terminal to an Ethernet switch on the control network.
2. Connect a PC to the Magelis XBTG/XBTGT operator terminal using an appropriate serial download cable. This example uses a Magelis XBTG4330 operator terminal with an XBTZG915 serial download cable.
3. Launch Vijeo® Designer on the PC and open a project to start the configuration process for communicating with the Allen-Bradley ControlLogix automation system. See Figure 2.

Figure 2: Start Vijeo Designer

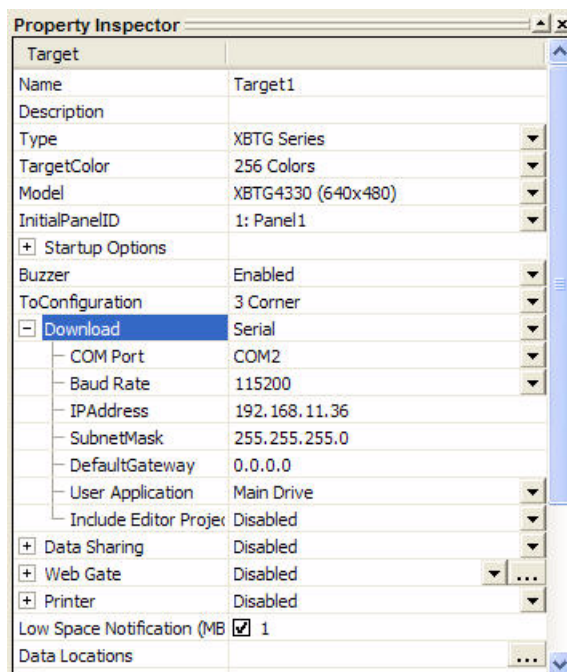


Setting Up the Communication Protocol

To setup the communication protocol:

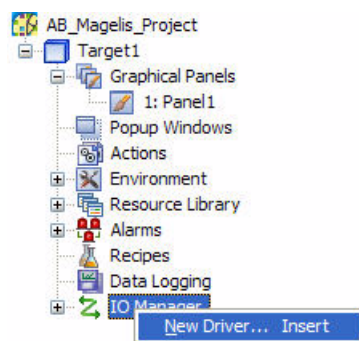
1. Select Serial from the drop down list in the Property Inspector pane as shown in Figure 3. Select the correct COM Port for the PC, and set the baud rate to 115200. This example shows COM Port 2.

Figure 3: Property Inspector Window



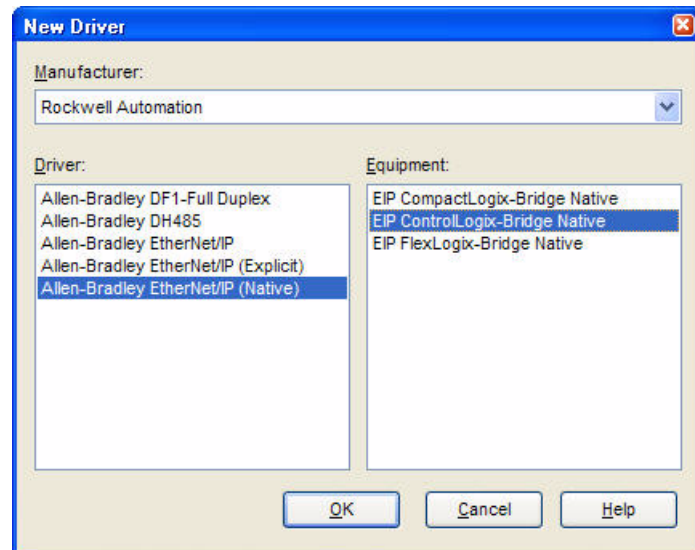
2. Add a new driver by right clicking on IO Manager and selecting New Driver. See Figure 4.

Figure 4: Selecting the New Driver



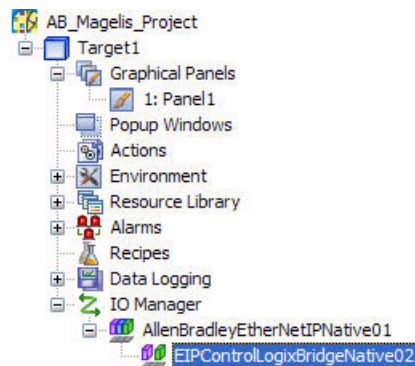
3. Select Rockwell Automation from the Manufacturer drop down list, and select the EIP ControlLogix-Bridge Native driver as shown in Figure 5.

Figure 5: Select EIP ControlLogix-Bridge Native Driver



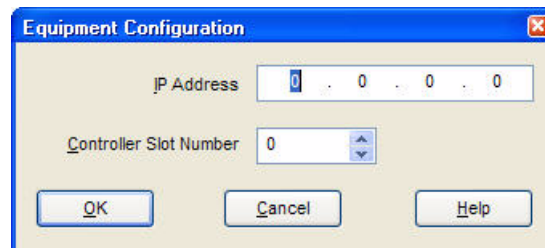
4. Double-click on EIP ControlLogixNativeBridge02 to open the Equipment Configuration window. See Figure 6.

Figure 6: Open the Equipment Configuration Window



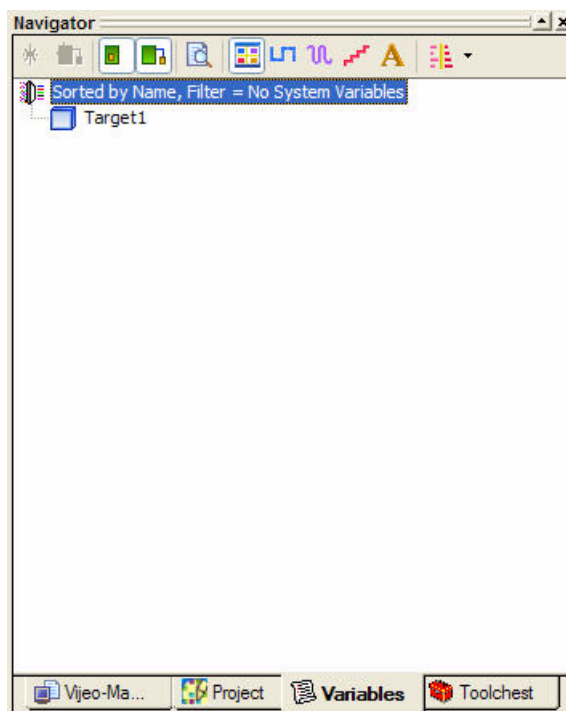
5. Enter the IP address of the ControlLogix ENBT/A module and the controller slot number of the XBTG/XBTGT operator terminal into the Equipment Configuration window. See Figure 7.

Figure 7: IP Address and Controller Slot Number



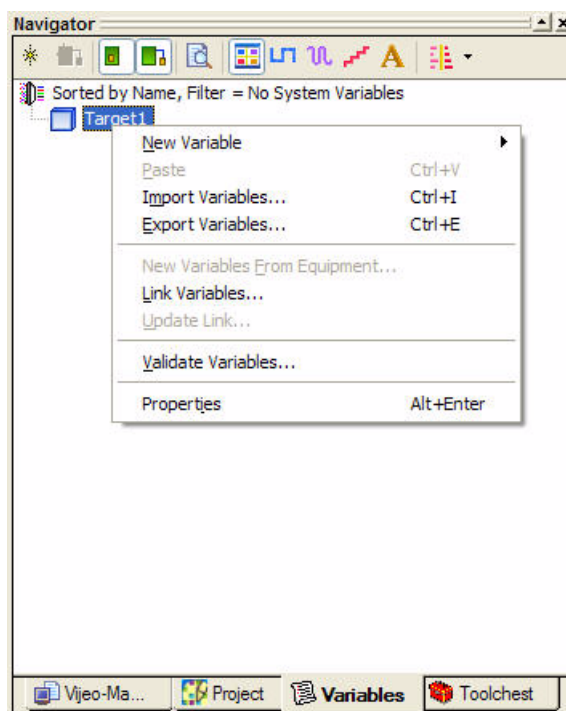
6. Select the Variables tab in the Navigator pane. See Figure 8.

Figure 8: Variables Tab in the Navigator Pane



7. Right click on Target1 to add New Variables. See Figure 9.

Figure 9: Adding a New Variable



8. Add the Variable Name and Data Type in the New Variable window. See Figure 10. The valid Data Types are listed in the *Allen-Bradley EtherNet/IP (Native) Driver* manual. Use the Vijeo® Designer Help menu to display this manual.

Figure 10: Adding Variable Name and Data Type

The screenshot shows the 'New Variable' dialog box with the following settings:

- Variable Name:** Integer01
- Description:** (empty)
- Data Type:** Integer
- Array Dimension:** 0
- Data Source:** External (selected)
- Sharing:** None (selected)
- ScanGroup:** EIPControlLogixBridgeNative
- Device Address:** (empty)
- Indirect Address:** (unchecked)

9. Press the button beside the Device Address as shown in Figure 11. This will bring up the AB EIP ControlLogix-Native Tags window as shown in Figure 12. This window allows the tag to be added exactly as it is tagged within the Allen-Bradley ControlLogix processor. The example window shows the Allen-Bradley tag "integer1." Click OK to accept the tag.

Figure 11: New Variable Window

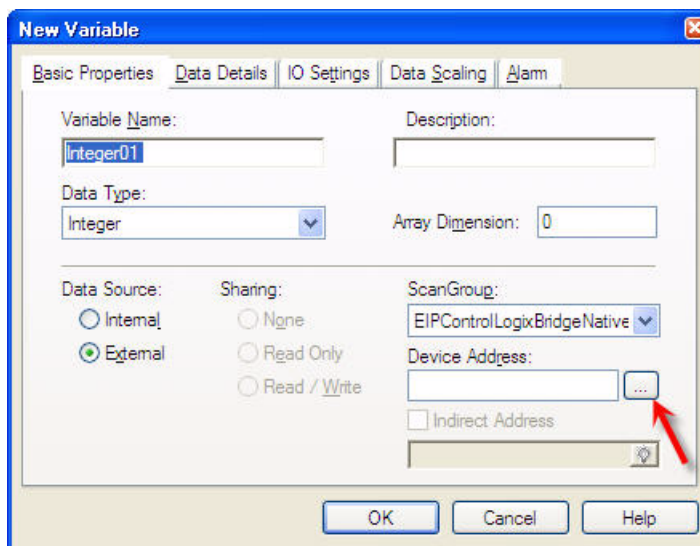


Figure 12: AB EIP ControlLogix-Native Tags



If you are using program tags from the ControlLogix system, the correct syntax is as follows:

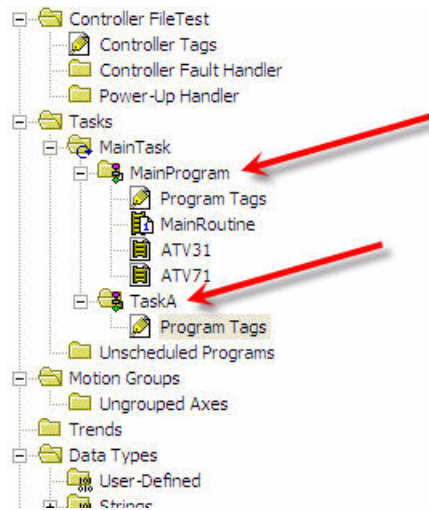
Program: <TaskName>.<name_of_Tag>

NOTE: The <TaskName> and <name_of_Tag> must be typed exactly as shown in the RSLogix 5000 software.

Example Program:MainProgram.booleantag1
 Program:TaskA.booleantag1

 See Figure 13.

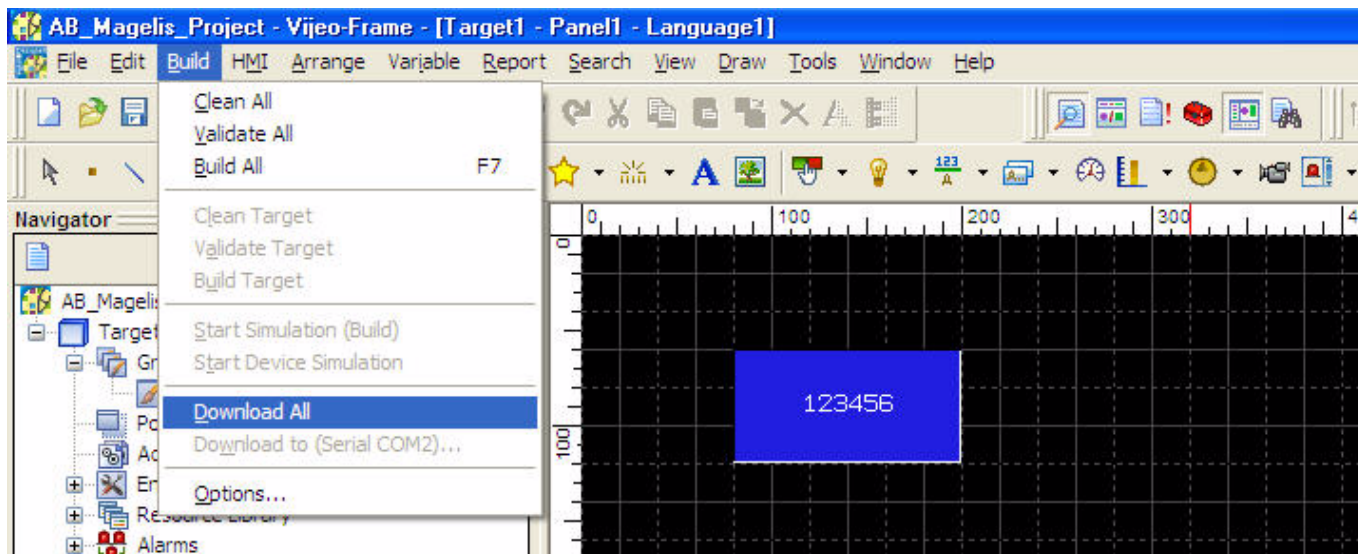
Figure 13: Main Program and Task A



10. Create a panel with a few simple objects to test the connection to the ControlLogix automation system.

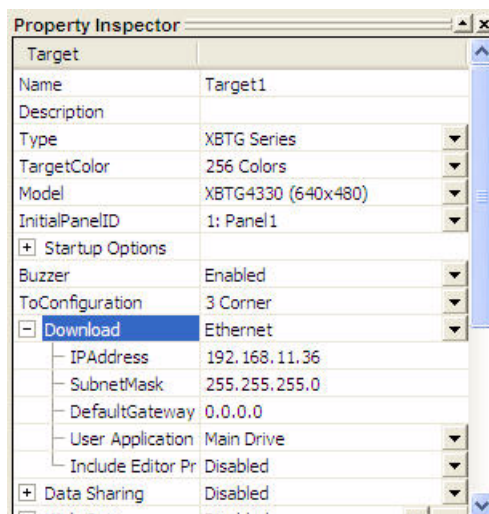
11. After you have verified the connection, build the application and download it to the XBTG/XBTGT operator terminal by selecting Download All from the Build menu as shown in Figure 14.
12. Test the functionality of the system.

Figure 14: Build Menu



13. After the initial download is complete, the XBTG/XBTGT operator terminal will have an IP Address assigned. The download communication type can then be changed to Ethernet for future downloads. See Figure 15.

Figure 15: Changing the Download Communication Type



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